STATEMENT OF JAMES T. CURTIS, JR., DIRECTOR, MATERIALS TRANSPORTATION BUREAU, U.S. DEPARTMENT OF TRANSPORTATION, BEFORE THE JOINT MEETING OF THE SENATE COMMERCE AND INTERIOR COMMITTEES RELATING TO ARCTIC NATURAL GAS RESERVE AND ALTERNATIVE TRANSPORTATION SYSTEMS, FEBRUARY 17, 1976.

Mr. Chairman and Members of the Committees:

I am James T. Curtis, Director of the Materials Transportation Bureau (MTB) recently established within the Department of Transportation. It is a pleasure to appear before you today on behalf of the Department to discuss the alternate systems proposed for the transportation of arctic natural gas.

I will restrict my remarks to a brief discussion of the safety factors involved in transporting arctic natural gas. As you are aware, the Department is responsible for the development and enforcement of comprehensive safety standards for the design, construction, testing, operation, and maintenance of pipeline facilities and vessels engaged in the transportation in the United States of natural gas, including liquified natural gas (LNG). By such a combination of design, construction, and operational requirements, a suitable level of safety in respect of life, property, and the environment is being achieved. These Federal safety standards are continually being revised and updated to incorporate the latest technology.

In order to comply with the present standards, the U.S. portion of the pipeline in the proposals being considered would be made of materials specifically intended for cold climate application so they will maintain their structural integrity under the extreme environmental conditions of the Arctic. Each compressor station installed to boost gas pressure in the pipeline would be required to contain safety devices to shut down and relieve pressure on station piping in case of an emergency such as overpressuring in the system or a fire at the station.

The pipeline system would be welded by welders who must pass stringent qualification tests in accordance with Federal pipeline safety standards. The pipe and all underground components would be coated with a corrosion protection coating and all underground pipeline facilities would be placed under cathodic protection to mitigate external corrosion. The cathodic protection system would be monitored periodically to make sure it is working properly. The gas transmission line would be inspected to assure proper installation. Block valves would be installed at intervals prescribed in the safety standards to limit the escape of gas in case of a leak or rupture. The location of the underground pipeline would be conspicuously marked to warn of its existence and thereby minimize any possible damage from excavating equipment.

Before operations begin, the entire pipeline would be tested to an internal pressure greater than the maximum operating pressure to assure safe operation at the maximum operating pressure. After operation commences, the pipeline right-of-way would be patrolled periodically to check for any activity which might endanger the pipeline.

In carrying out our safety responsibility, as it relates to the transportation of natural gas from Alaska, the Department has been concentrating its efforts on identifying those areas where safety standards are required to address special conditions and techniques necessary for natural gas transportation in an arctic environment.

In this connection, the Department was continually involved in monitoring the design and construction of the Trans-Alaska Crude Oil Pipeline, construction of which began in the Spring of 1974. The Department is a member of the Technical Advisory Board of the Department of the Interior Task Force on Alaskan Oil Development which is an interagency committee formed to give technical advice concerning the oil pipeline. The Trans-Alaskan crude oil pipeline has been designed and constructed in accordance with Federal safety regulations, and upon completion, its operation and maintenance will be subject to the regulations of the Department.

During the construction of the Trans-Alaskan crude oil pipeline, the Department has taken into consideration the uniqueness of the Arctic environment in appropriately revising certain design and construction requirements for oil pipelines that were not appropriate for that cold climate. Our involvement with the crude oil pipeline has made us aware of special design and construction techniques that must be employed when installing pipelines in the Arctic. For example, the design of the pipeline must compensate for temperature stresses. Pipeline materials must possess fracture toughness properties to preclude brittle fracture during operation. Welding must be performed with special filler materials and special welding techniques to assure sound welds, and steps must be taken to preserve the delicate ecological balance during construction.

We anticipated that the pipeline safety considerations involved in transporting natural gas from the Arctic will closely approximate those which were involved in the construction of the crude oil pipeline.

In the event the natural gas is transported by pipeline through Alaska and transformed into liquid form for transportation by vessel to the lower 48 States, the Department's regulations relating to the storage and handling of LNG and to LNG vessel design and construction, operational controls, and vessel movements will be applicable.

The Department's standards for land-based storage and handling of LNG are intended to prevent or mitigate the potential for LNG facility accidents. These standards relate to facility design, construction, operation, and maintenance, as well as to procedures for the transfer of LNG between the vessel and the facility. Under these requirements, the operator of a facility must establish and execute written operating and maintenance plans. To address potential and actual accidents at facilities, the operator must prepare and follow written emergency procedures, train appropriate personnel, and establish liaison with public officials.

Recently, extensive technological developments have taken place regarding materials, structural designs, fabrication techniques, sensing and control systems, as well as other equipment, such as automatic time response block valves, and testing methods. These advances have assured the capability of containing and handling fluids at cryogenic temperatures and have served to minimize the risk of an LNG accident.

In the event of serious LNG accidents at onshore facilites, current technology involves containment of spilled LNG by barrier walls, dikes, excavations, or berms. Risk is further attenuated by spacing distances between facility components and plant boundaries, fire control systems, and training personnel in fighting LNG fires.

All LNG vessels operating in U.S. waters, both U.S. flag and foreign flag, must meet the Department's design and construction standards. These standards, with associated plan reviews and inspections, provide for safe carriage of LNG under normal operating conditions and for casualties other than major collisions or strandings. To prevent major collisions and strandings, vessel operational controls are utilized by the Department. These controls take the form of Contingency Plans which are prepared and issued, and specify additional safety measures to be taken to address varying conditions which may arise in connection with a particular LNG shipment.

With respect to the control of vessel movements between the Alaska crude oil pipeline or the proposed natural gas pipeline and West Coast ports, several provisions will apply. First, a vessel traffic service is being established in the Prince William Sound area. This service will control vessel movements between the terminal in Port Valdez and Middleton Island in the Gulf of Alaska and would be expanded, if necessary, to handle LNG vessels operating from other terminals in the area. A VHF-FM network is being established to provide continuous communications between the vessel traffic center in downtown Valdez and all vessels participating in the separation scheme extending from Valdez Arm to Middleton

Island. Traffic separation schemes are already in place in the Strait of Juan de Fuca the approaches of San Francisco, and the approaches of Los Angeles/Long Beach.

Mr. Chairman, we believe that the system proposed, if designed, constructed and operated in accordance with the Department's regulations, will provide the level of safety necessary to protect life, property and the environment.

Thank you, Mr. Chairman, and I would be happy to answer any questions you and the Committee members may have.